

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
17 March 2005 (17.03.2005)

PCT

(10) International Publication Number
WO 2005/023890 A1

(51) International Patent Classification⁷: C08F 297/08, 2/00, 4/643

(21) International Application Number: PCT/EP2004/008761

(22) International Filing Date: 4 August 2004 (04.08.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
03102735.2 11 September 2003 (11.09.2003) EP
60/503,283 16 September 2003 (16.09.2003) US

(71) Applicant (for all designated States except US): BASELL POLYOLEFINE GMBH [DE/DE]; Brühler Strasse 60, 50389 Wesseling (DE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): RESCONI, Luigi [IT/IT]; Via Palestro 101, I-44100 Ferrara (IT). PELLICONI, Anteo [IT/IT]; Via Volta, 22, I-45030 Occhiobello-Rovigo (IT). FERRARI, Paolo [IT/IT]; Via Leati, 18, I-44100 Ferrara (IT).

(74) Agent: SACCO, Marco; Basell Poliolefine Italia S.p.A., Intellectual Property, P.le G.Donegani 12, I-44100 Ferrara (IT).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

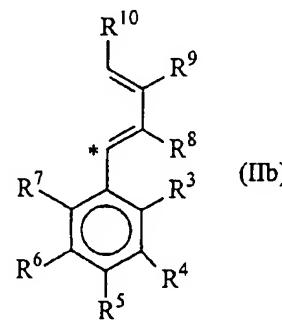
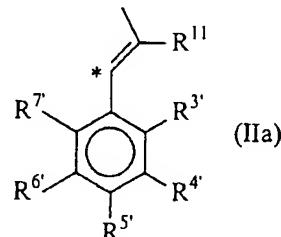
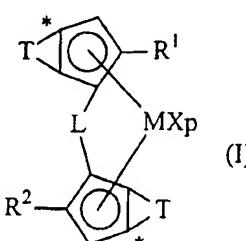
— of inventorship (Rule 4.17(iv)) for US only

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MULTISTEP PROCESS FOR PREPARING HETEROPHASIC PROPYLENE COPOLYMERS



(57) Abstract: A multistage process comprising the step of polymerizing propylene in the presence of a catalyst system, comprising one or more metallocene compound of formula (I): wherein M is an atom of a transition metal; p is an integer from 0 to 3, X, same or different, is a hydrogen atom, a halogen atom, or a hydrocarbon group; L is a divalent bridging R¹ and R², are C₁-C₂₀-alkyl radicals; T, equal to or different from each other, is a moiety of formula (IIb) or (IIa): wherein R³, R⁴, R⁵, R⁶, R⁷, R⁸, R⁹, R¹⁰ and R¹¹, are hydrogen atoms or hydrocarbon groups; with the proviso that at least one among R³, R⁴, R⁵, R⁶, R⁷, R⁸, R⁹, R¹⁰ and R¹¹, is different from hydrogen; R¹¹ is a hydrogen atom or a hydrocarbon group; R⁸, R⁹ and R¹⁰, are hydrogen atoms or hydrocarbon groups; and further comprising the step of contacting, under polymerization conditions, in a gas phase, ethylene and one or more comonomers. Where the amount of the polymer obtained in the first step ranges from 4% by weight and 20% by weight, extremes excluded, of the polymer obtained in the whole process.

WO 2005/023890 A1